

SEP 10 2008

PATENT APPLN. NO. 10/550,761  
SUBMISSION UNDER 37 C.F.R. § 1.114

PATENT  
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IN THE CLAIMS:

1. (cancelled)

2. (currently amended) A manufacturing method of a bonded substrate having a final active layer thickness of 200 nm or less, comprising:

a) providing a first silicon wafer as an active layer wafer and a second silicon wafer as a support substrate;

b) forming a silicon oxide film on a surface of said active layer wafer;

c) implanting hydrogen ions into the active layer wafer to form a hydrogen ion implanted layer under the silicon oxide film;

d) bonding the active layer wafer and the support substrate such that the silicon oxide film is interposed between the active layer wafer and the support substrate and forms a bonded substrate having an embedded silicon oxide film;

e) heat treating the bonded substrate to form regions of high density hydrogen bubbles and cleaving away a portion of the active layer wafer at said regions whereby the non-cleaved active layer wafer of the bonded substrate becomes the active layer of the bonded substrate;

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f) heat treating the cleaved bonded substrate to enhance bonding strength between the active layer wafer and the support substrate; and

g) etching a surface of [[an]] the active layer of the bonded substrate to control the thickness of said active layer, said etching being carried out using a solution having an etching effect so as to etch in a range of 1nm to 1µm, said solution being a solution having pH 9 or higher and containing alkaline chemicals and an oxidizer.

3. (previously presented) A manufacturing method of a bonded substrate in accordance with claim 2, in which an etching rate in said etching is not greater than 100nm/min.

4 - 7. (cancelled)

8. (previously presented) A manufacturing method of a bonded substrate in accordance with claim 2, in which after said etching, a thickness of said active layer is measured and based on said obtained measurement data, said etching is repeated until said thickness of the active layer across its entire area comes near to a predetermined thickness of the final active layer.

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9. (previously presented) A manufacturing method of a bonded substrate in accordance with claim 3, in which after said etching, a thickness of said active layer is measured and based on said obtained measurement data, said etching is repeated until said thickness of the active layer across its entire area comes near to a predetermined thickness of the final active layer.

10 - 13. (cancelled)

14. (previously presented) A manufacturing method of a bonded substrate in accordance with claim 2, in which one of following steps is performed on said active layer of said bonded substrate before said etching, said steps including:

(1) a step of chemical mechanical polishing taking advantage of a chemical effect and a mechanical effect at the same time;

(2) a step of hydrogen treating for performing a heat treatment in a reducing atmosphere containing hydrogen; and

(3) a step of forming a silicon oxide film over said active layer and then removing said silicon oxide film along with a damaged portion of said active layer, which has been created in said cleaving.

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15. (currently amended) A manufacturing method of a bonded substrate in accordance with ~~claim 3~~ claim 2, in which one of following steps is performed on said active layer surface of said bonded substrate ~~before~~ after said etching, said steps including:

(1) a step of chemical mechanical polishing taking advantage of a chemical effect and a mechanical effect at the same time;

(2) a step of hydrogen treating for performing a heat treatment in a reducing atmosphere containing hydrogen; and

(3) a step of forming a silicon oxide film over said active layer and then removing said silicon oxide film along with a damaged portion of said active layer, which has been created in said cleaving.

16. (cancelled)